Growth Promotion for Child Development

Proceedings of a colloquium held in Nyeri, Kenya, 12–13 May 1992

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Growth Promotion for Child Development

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Introduction

It is widely agreed that inadequate physical growth and poor development of children are prevalent and important problems worldwide. In most countries, the situation is worse for the poor and the deprived than for the more affluent section of the population. For a long time health workers and others have taken action to attempt to influence better growth and to foster optimum child development. Other than the few who argue that "small is healthy," by far the majority wish to find the means to help families help their children grow well physically, socially, and psychologically. This colloquium is designed to examine current strategies, to review successes and failures, and, most important, to suggest new directions to achieve the objective of improved growth and development for children at risk.

Currently, many different strategies, many different programs, many different actions by international agencies, national governments, individual families, and others are taken to promote good growth and development. But there is one strategy, above others, that both in its name and in its stated objectives focuses very specifically on the growth of children. This is growth monitoring, now better termed *Growth Monitoring and Promotion* (Hendrata 1988). This strategy has become controversial (Anon. 1985) with strong proponents and opponents (Gopalan and Chatterjee 1985; Rohde 1984 and others). The many other actions taken to support or promote growth and development, although very widely practised, are not as visibly advocated as strategies for growth promotion. Because of this, growth monitoring as practised is deserving of attention, but this should not be at the expense of limiting consideration of other actions that foster good child growth and development. Recognition also needs to be given to the fact that good growth is often related to

[1]This paper draws heavily on M.C. Latham 1991. Growth monitoring and promotion. In Anthropometric Assessment of Nutritional Status, Wiley-Liss Inc. Chapter 17, pp. 287–299.

other aspects of good child development and that those situations, environments, and actions that promote good child development, also usually help promote optimum physical growth. The two are intertwined. But because physical growth is relatively easy to measure, much more reliance (Stephenson et al. 1983) is placed on physical growth than on other aspects of child development, as a gauge of childhood well-being.

Growth Monitoring and Promotion

For several decades the periodic weighing of infants and children to assess their growth has been advocated and used within health systems. Sometimes measurements other than weight, including especially length or height, arm circumference, and skinfold thickness, are also used either to determine development or assess nutritional status (Latham 1979; Jelliffe 1966). These secular determinations, if periodic, are strictly speaking anthropometric growth monitoring. The term monitoring means literally "to keep watch over" or "to check systematically."

However, the term "growth monitoring" now usually refers to the periodic weighing of children and the plotting of each measurement on a "growth chart" or child health card. The information on the card is meant to influence actions by the health worker making the measurements and the mother or guardian who brings the child to be measured (Latham 1991).

The recording of a child's weight on a growth chart in itself serves no useful purpose, unless accompanied by some action (Latham 1984). This has long been recognized, but in many growth monitoring programs this is about all that is done. Under these circumstances the potential benefits of growth monitoring are not and cannot be achieved. A realization of this led to the use of the term *Growth Monitoring and Promotion* (Hendrata 1988). This is potentially important because the promotion of good growth clearly should be the main objective of regular weighing.

Wherever a growth monitoring and promotion (GMP) program at the local or national level concentrates on weighing and charting, but does not use the chart in a coherent positive manner, then it clearly is an exercise in futility. This is assuming that growth monitoring is being used mainly to influence growth of the individual child. Growth monitoring could be used simply to generate data for purposes of nutritional surveillance, or program evaluation. That is a different matter, and is not the subject of this colloquium.

Growth measurements have been used as a means of judging growth and health of children for many years. In several industrialized countries, well baby clinics included child weighing as a means to judge proper development. Morley et al. (1968), on the basis of work in Nigeria, advocated in the 1960s, the use of growth charts in developing countries, and this can be regarded as the birth of the growth monitoring movement. The view was that "maintaining an adequate rate of growth" was replacing "prevention of malnutrition" as the goal toward which child clinics might direct their work (Anon. 1968). Morley stressed the use of the chart to promote growth and not to cure malnutrition; he advocated the mother, rather than the clinic, hold possession of the chart; and he later stressed that the health worker and the mother should be more interested in growth velocity than in the child's position on the chart. The term "road to health chart" became widely accepted (Morley 1973).

Currently, many different weight charts are in use around the world. Debate exists about which kind of growth chart to use. These are usually based on "reference standards," and unless accepted national standards exist, it is recommended by WHO and others that National Centre for Health Statistics standards be used (Stephenson et al. 1983).

GMP includes sequential weighing and it is used to help caretakers maintain good growth in the individual child. A useful definition (Hendrata 1988) adopted by the Indian Integrated Child Development Service is:

> Growth Monitoring and Promotion can be defined as an operational strategy of enabling mothers to visualize growth or lack of growth and to receive specific, relevant and practical guidance in ways in which she, her family and community can act to assure health and continued regular growth in her child. GMP implies a regular and sequential measurement of growth, recognizing it to be the result of overall health, nutrition, environment, psychosocial and development factors in the child.
>
> GMP is based on a strategy aimed at behavioural change and adoption of improved self-help actions within the family and the community in order to promote optimal health. In short, GMP is a communication strategy for making health and nutrition education more individualized, more convincing and more effective.

My current view is that GMP should, where possible, be closely integrated into Primary Health Care (PHC) activities, and it should not usually be a separate program. It should concentrate on maintaining good growth in infants and children, and not, as is often the case, be used mainly for rehabilitating children whose growth is poor. If this is to be the focus, then it is essential that infants enter the program soon after birth because, in general, infants 0–5 months of age who are breastfed have satisfactory growth. GMP is then a preventive not a

curative strategy; it is designed mainly to promote good growth and health, not to deal with malnutrition and ill health. Workers should be obtaining information on how mothers and families are managing to achieve good growth rather than mainly finding the reasons for growth failure. Praise and reinforcement should be an important feature of the program. Although the major emphasis is on maintenance of good growth, which can be viewed as a preemptive strategy, nevertheless, the program should include a strategy for dealing with those hopefully few cases where the program has failed and where children are not doing well and need special attention. This will usually involve some special advice from health workers involving behavioral change aimed to achieve rehabilitation and in some cases will necessitate treatment or referral. Growth monitoring then is viewed as a strategy to empower mothers to maintain good nutritional status in their children and to prevent growth retardation.

In GMP programs, much of the action should consist of positive reinforcement rather than corrective action. As a diagnostic exercise, it should be as much to find out what mothers are doing right as what is going wrong. It is also used to detect early growth faltering, to find the likely reasons for this, and to suggest to mothers corrective actions that are realistic and that they might try. It is likely to be relatively unsuccessful if used mainly to try to "correct" the growth of older children who are moderately or severely stunted, especially if these children are not wasted. In all cases, meaningful involvement of mothers and families should be the heart of a growth monitoring and promotion program. It is a participatory exercise; it involves dialogue and discussion, not lecturing and scolding; and mothers should help in decision-making, for example, about the location, the hours, and the organization of GM sessions. Mothers need also to be consulted about such matters as the need for privacy and confidentiality and whether it is appropriate in their culture to weigh children nude or clothed.

This is a view of the concepts of what good GMP should be, rather than what it usually is in practice in countries in Africa, Asia, and Latin America (Latham 1991). This author continues to see growth monitoring in action that ignores these principles. Too often growth monitoring is used mainly as a weighing exercise and advice is given only to mothers whose children are doing badly. Often, the mothers are scolded publicly and advice is frequently impractical and does not recognize what would be useful to them. Inadequate time is devoted to dialogue, to advice, and to education. In some parts of the world, GMP is regarded by health workers mainly as a tool for diagnosis of malnutrition. In other places, it is used to select children to receive free or subsidized weaning foods. Feeding can be a component of a GMP program but the full potential benefits will not be realized without the level of communication, dialogue, and empowerment of mothers and communities described earlier. At worst, growth monitoring consists of the routine exercise of weighing and weight charting with no

advice given and with no use made of the chart. Those conducting the GMP session may not have time to do anything more than weighing and charting; and they may not have the training or knowledge to use other needed interventions properly. Where this is the case, then GMP is a useless exercise, and one that is wasteful of resources including mothers' time. Elsewhere, there may be societies with cultural prejudices against weighing of young children which may be a reason for not introducing GMP or at least for sensitive efforts to overcome this difficulty.

The differences between growth monitoring on the one hand and nutritional surveillance on the other have been pointed out by Rohde (1984). This view may not be consistent with the current UNICEF approach to nutritional surveillance. Nutritional assessment using growth data for surveillance may, for example, require only small subsamples of the population of the communities involved. In this case, quite large numbers of children can be weighed per day because diagnosis and communication is not an important feature. In addition, surveillance may require precise, accurate measurements done by a highly trained worker with the measurements repeated at long intervals. In contrast, GMP programs hope to enrol all children under a particular age; the groups of children at a weighing session should be relatively small because diagnosis and dialogue are important; the measurements made need not be as precise and can be performed by a person with less education and training (sometimes even by mothers themselves); and children should if possible come for weighing and growth promotion sessions at much shorter intervals. If the main objective of a program is nutritional surveillance and not growth monitoring, then the program should be different.

In a properly run GMP program, most infants should be enroled as soon after birth as possible. Children seen for the first time in their second or third year of life often will already have evidence of growth failure, and GMP can at this stage do relatively little to improve the situation, especially in stunted older children. Infants under 6 months of age when breastmilk is adequate and breastfeeding is the normal feeding practice usually show good growth. This, therefore, is a period when dialogue is most useful. GMP can provide positive reinforcement, but it can also be a time when dialogue becomes established. This becomes most useful in the months ahead, during the nutritional danger period, which is usually between 6 and 18 months of age. A mother should tell the health worker about what she plans to do, when she intends to introduce other foods, how long she expects to breastfeed, whether she wants to get the infant immunized, and how she will deal with illnesses such as diarrhea and respiratory infections. The worker at the GMP session should now cautiously guide the mother and discuss with her a strategy for maintaining good growth and health in her infant during the danger period, rather than concentrating on the rehabilitation or cure of malnutrition.

If this is to be the heart of the program then it is important that the health worker has a good understanding of existing child raising practices and the local cultural, social, and dietary environment of the community. Without this, the messages may not be relevant, practical, or feasible for mothers to implement and may not even be credible to them. The health worker must also have a minimum of knowledge about the factors most likely to lead to growth faltering. For example, he or she should understand that after about 6 months of age breastfeeding alone often provides inadequate nutrition and needs to be supplemented; that too much supplementation may reduce suckling and lead to insufficient milk; that certain foods are bulky and have low energy density, but that there are ways to increase energy density; that as breastfeeding becomes less important, frequent feeding with other foods is important while breastfeeding should continue for as long as possible; that infections may themselves lead to growth faltering, but that starvation as a treatment for diarrhea and other infections contribute to this; and that breastmilk and other foods should be provided during most illnesses. To discuss this properly, the health worker needs to have enough time with each mother, adequate training, and understanding of health and nutrition beyond charting. Above all, he or she needs to have the right temperament.

An operational rule then might be that the health worker requires adequate time to talk to each mother (at least 5–15 minutes) and needs to have a certain basic knowledge and reasonable communication skills. It is important that he or she knows how to listen and to elicit information from the mother and how to provide positive feedback and encouragement plus appropriate advice. This takes some skill, and some of these skills can be imparted in training. But obviously some individuals are better listeners and communicators than are others.

Another operational rule that follows is that GMP be integrated into Primary Health Care. Many of the messages and advice suggested are an integral part of PHC. Mothers should, in general, not have to attend separate sessions on a different day for treatment of common infections and to have their children immunized, to receive vitamin A or anthelminthics, to get advice about oral rehydration, or to attend for prenatal examination or get family planning advice. In fact, it should be the duty of the GMP staff to ensure that all children attending have been immunized against the six diseases covered in the Expanded Program of Immunization, that mothers know how to use oral rehydration therapy, etc. Growth monitoring and promotion can be a part of PHC or, alternatively, it can encompass PHC activities. Hendrata (1988) has stated that "GM and P can help to shift the emphasis from professionals to parents, from clinics to homes, from dependence to empowerment. An in so doing it can help to build a genuine primary health care system." GMP can serve as an activity that at frequent intervals brings the child into contact with the health services.

A good principle is that advice, nutrition, and health education should be rather specific and aimed at the particular circumstances of each mother and child. The dialogue should give the mother the feeling that she herself is developing a realistic achievable strategy to maintain the good growth and health of her child and in this way she will see the benefits of the time that she has invested in the exercise. The content of the messages should be simple, and must take account of the child in a family situation.

Finally, GMP should be conducted as near as possible to people's homes; at a time convenient to parents; in small enough groups to allow adequate individualized dialogue and short waiting periods; and be conducted in a way mainly to suit parents not health workers. For example, in an urban setting where mothers work away from home, the sessions could be on a Sunday and the health workers have Monday off. Unless some means are provided for combining GMP with simple therapy and other preventive services, attendance may be poor. This might include, for example, deworming, administration of vitamin A, provision of ORT packets, availability of antimalarial drugs, and possibly also simple treatment of common illnesses. In all cases, rural GMP activities based in a small village must be linked with and have back-up from a health centre, dispensary, or clinic. Rohde (1984) and others have stated that food supplements should not be provided at GMP sessions even if the child is faltering, because supplements may have negative consequences for the program. This view is not shared by all those involved in GMP. In the much heralded Tamil Nadu Integrated Nutrition Project (TINP) funded by the World Bank in India, free food supplements are provided and are targeted to the most needy children, and this targeting is based largely on the weight charts.

Under some circumstances, GMP may be conducted not at a health centre, but by visits to peoples's homes. This will often be popular with mothers, and it will result in a wider coverage especially of the most neglected families, but will usually be more expensive, because one fieldworker can cover fewer children per day. Although GMP can act as a catalyst in the strengthening of primary health care activities, it is also true that it is much easier to have GMP as part of a well-functioning PHC system. Therefore, efforts to strengthen and improve primary health care will also make well run GMP a more feasible possibility.

Although growth monitoring is simple in concept, and is a relatively low-cost technology for helping to reduce the extent of malnutrition, it is very seldom done well. It takes good organization, adequate resources, an appropriate existing infrastructure, and careful training and proper supervision of workers. In some geographic locations, it may involve overcoming cultural barriers.

Growth monitoring (and less frequently, growth monitoring and promotion) is being widely practised, and with the blessing and financial assistance of UNICEF and other agencies, the numbers of children included in GM programs has greatly increased in the last 8 years. UNICEF as an advocate claims many successes of growth monitoring in developing countries around the world (Grant 1987).

The success or failure of GM depends on how the information and the chart are used. The weighing and the plotting have to result in action if there is to be a benefit. Those taking action in general are likely to be either the mother (or parents or guardian) of the child or the health worker. Growth monitoring is one among several means of attempting to achieve the desired goal of healthy growth. Are there other ways that are easier, cheaper, and more feasible than GM to promote good health and development in poor societies?

Evaluation of Growth Monitoring and Promotion

Many governments, many funding agencies, and many nutritionists and pediatricians strongly believe that GMP is a very important strategy in the fight against malnutrition. There are also serious critics of growth monitoring who state that its value has not been demonstrated and that it is too costly a project for poor countries, considering the very limited financial resources available for health and nutrition services.

The unfortunate fact is that there have been very few scientific attempts to evaluate growth monitoring and most of these have flaws in their design. There are studies that suggest that illiterate women can be taught to understand growth charts (Pelemeier 1985). In some studies, where growth monitoring appeared to be of value in terms of improved health or nutrition, it was not possible to separate benefits from the growth chart, per se, from benefits resulting from the other interventions introduced as part of the growth monitoring program, activities such as immunizations, oral rehydration therapy, supplementary feeding, treatment of disease, and others (Morley 1973).

A detailed review of GM in India suggests major problems and a few successes, but illustrates that no well-conducted evaluation has been undertaken (Gopalan and Chatterjee 1985). In the case of Indonesia, both the World Bank-funded project covering 225,000 people and designed to examine the impact of community-based GM, and the ever-expanding UPGK (Usaha Perbaikan Gizi Keluarga) program covering a large population using volunteers termed "Kaders," have been described at length (Griffiths 1985). In the former project, it is claimed that based on 600 program households and 400 comparison households, there was

a significant improvement in mothers' nutritional knowledge and practices, and in the nutritional status of the children. Unfortunately, there were many differences between the two groups, and it is not possible to judge how much improvement was due to the major efforts of nutrition communication and behaviour change and what exact role was played by the growth chart as a part of GM.

Studies in Jamaica, in Lesotho, and elsewhere also have problems and produced results that are unconvincing. The book length publication "Use of Growth Charts for Promoting Child Nutrition – A review of Global Experience" by Gopalan and Chatterjee (1985) concludes that the effectiveness of GM has not been proven, but also suggests that good evaluation studies have not been undertaken. In 1985, Rohde stated that the statistical proof of the efficiency of growth monitoring had still not been demonstrated.

The literature to date does not include very many well-controlled, well-designed studies to evaluate the effectiveness of growth monitoring. There are even fewer reports of research that has attempted to evaluate the benefits of the weighing and charting component of growth monitoring, in comparison with the benefits from the nutrition education and primary health care interventions which should also be a part of GMP programs. There are not many studies on the relative time and resources devoted to the weighing part and the other GMP activities. In Zaire, Gerein and Ross (1991) evaluated three child health programs that included growth monitoring. They concluded that the "theoretical gain in health service efficiency by targeting was largely lost" and that the "programs did not exploit the potential of growth monitoring as an educational and motivational tool." They conclude from their study and other recent reports that "the introduction of growth monitoring into future child health programs appears difficult to justify at present."

In contrast, excerpts from a report for the Tamil Nadu Integrated Nutrition Project (TINP) as reported by Berg (1992) describe the great benefits of targeting supplementary feeding on the basis of weighing as a part of its program. In the project, selective supplementary food is provided on the basis of poor growth, as judged by serial weight determinations. The report states that "being weighed, selected, fed and graduated appears to have a profound educational impact on the beneficiaries and on staff." The report states that "TINP demonstrated that growth monitoring can be done in large-scale nutrition projects, provided workers perceive it to be the centrepiece of the project" and that "the project must be able to prove to mothers that regular weighing will promote healthy growth" and "by demonstrating the ways in which such problems can be overcome."

A recent study also in Tamil Nadu, but conducted in collaboration with the Christian Medical College and Hospital in Vellore, and not a part of TINP, has attempted to evaluate the benefits of weighing and charting, separate from PHC and other interventions (George et al. 1992). The research suggests that a package of interventions including nutrition and health education and PHC improves the knowledge of mothers and the growth of young children with or without the use of weighing and growth charts. So the weight chart, even when well used, showed no additional benefits in growth when compared with not using the growth chart in families where other interventions were provided. This study used home-based, not clinic-based GMP, and did not include supplementary feeding.

An editorial in the Lancet (1985) suggests, any system "is only as good as the workers who operate it." Unlike oral rehydration, GM is not a curative approach with quick results and, unlike immunization, it is not a magic bullet requiring little behavioral change. Rather, it is intended as a means by which a simple technology can help people help their children and can in theory empower mothers. The unanswered questions remain: (a) What conditions need to exist for it to be effective? and (b) Can equally good results be obtained at lower cost using similar interventions without frequent weighing?

Conclusions

A review of published data on GMP suggests that it is very seldom being done well. The principles described here as being essential or important are usually ignored. Most GMP is so focused on weighing and charting, and so little on growth promotion, as to raise serious doubts about its use as generally practised. In many instances, the health workers do not appear to have the time to provide the education and other interventions that are essential for the promotion of good growth and development. Often, they lack training, motivation, and supervision. In many cases, GMP workers are not provided the resources to allow them to help the mothers and children attending. The primary health care component is frequently weak or almost nonexistent. No wonder sceptics doubt whether GMP is a strategy worth supporting.

Added to these problems is the fact that despite much reported evaluation of GM programs, practically none of these have evaluated the added benefits resulting from the weighing and the growth charts, rather than the benefits which accrue from the other interventions. Even in the growth monitoring projects reported to be most successful, the actual role of the weighing and the growth chart have not been evaluated. Thus, TINP in India used regular weighing as the centrepiece of the project and feeding targeted to unsatisfactory weight gain in

children as an important intervention. Reports state that nutritional status improved, that relapses into malnutrition were reduced over time, and that the selection of children on the basis of growth was very important in effective nutrition education (Berg 1992). What we do not know is if the selection of young children for special attention had been based on something other than weighing, it would have resulted in equal "success." What would the results have been if the basis of selection had been the weight for age of the child at say 12 months of age, or a mother's perception at each visit that the child was not doing well, or had reported poor appetite, or that the health worker made a judgment on the basis of the history provided by the mother and the appearance of the child, or if arm circumference rather than weight had been used? We do not have the answer to these questions, either for TINP or elsewhere.

The results from the research by George et al. (1992) suggest that in a situation in India where considerable effort is expended to ensure that reasonably good levels of PHC, health and nutrition education, immunizations, deworming, and other interventions are available to rural families, then the addition of weighing provides no further benefits as judged by anthropometry. At the other end of the scale, the Zaire study of Gerein and Ross (1991) and reports from elsewhere would suggest that weighing and charting not accompanied by an adequate level of effective nutrition and health education, or other interventions, is unlikely to produce benefits to child nutrition or health and is not worth doing.

Are there situations between these two extremes where weighing and charting would be very beneficial, because it greatly helped the other interventions, and these other interventions were well implemented? We do not have an answer to this question; certainly not one that would be acceptable to the sceptics. On the other hand, perhaps the advocates of GMP and the critics could agree on a minimum set of circumstances that are deemed essential or near essential for GMP to have any likelihood of success in improving health and nutrition. For example, if the weighing and charting for one mother and child takes less than 10 minutes, perhaps double that time needs to be available for advice, education, and other interventions.

If the health or clinic workers do not have that amount of time, or if the desired interventions are not feasible in a particular setting, then perhaps the weighing and charting is not desirable. Perhaps particular trajectories on the growth chart should be tied to particular counselling, and sets of counselling cards for different situations are important or essential. Perhaps time and resources spent on GMP are not appropriate in communities where levels of immunization against measles or other preventable diseases are under, say, 75%.

Are there ways to identify countries or districts or communities where other ways of screening children for interventions may be easier and more effective than child weighing? Have we adequately (either with or without GM) used the mother's opinion on the health and well-being of her child as a way to select children at risk? Could the child's weight at a particular age, perhaps 6, 9, or 12 months, be the basis for action over the next 12 months, rather than the practice of time-consuming weighing at frequent intervals? Could a measure of poverty, or of mother's education or nutritional or health knowledge provide the basis for selection of children for special attention? Could a Paulo Freire approach, where communities themselves play a major role in assessing both their own problems and suggesting appropriate local actions, be preferable and more effective than GMP imposed on them (Freire 1972; Drummond 1975)? Could such an approach combined with mothers weighing their own children as part of growth promotion be an integral part of community development, as suggested by Morley (1992)?

This Colloquium will provide an opportunity to discuss what is known about growth promotion for child development, and to consider these and many other questions. We may disagree about the means, but all here seek to protect and promote optimum nutrition, health and well-being for the world's children.

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